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The role of family functioning and self-esteem in the quality of life of adolescents referred for psychiatric services: a 3-year follow-up

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Abstract

Purpose To investigate, in adolescents referred for psychiatric services, the associations of initial self-esteem and family functioning with level and change of quality of life (QoL) over a 3-year period, over and above the effect of their emotional problems.

Methods Of 1648 eligible 13–18 years old patients attending the child and adolescent psychiatric clinic (CAP) at least once, 717 (54.8% females) were enrolled at baseline (a response rate of 43.5%). Self- and parent reports on the McMaster Family Assessment Device were obtained. Adolescents reported self-esteem on the Rosenberg Scale, and emotional problems on the Symptom Check List-5. Adolescents completed the Inventory of Life Quality in Children and Adolescents (ILC). After 3 years, 570 adolescents again completed the ILC, and for 418 adolescents parent information was available. The longitudinal analysis sample of 418 adolescents was representative of the baseline sample for age, gender, emotional problems, and QoL. We used modified growth-model analysis, adjusted for SES, age, gender and time of contact with CAP, where residual variances for ILC at baseline and follow-up were fixed to 0.

Results A poorer family functioning at baseline, reported by parents, was significantly associated with worsening QoL during the 3 years follow-up period ($p = 0.001$).

Conclusions Parents have important knowledge about their families that may reflect long-term influences on QoL development in adolescent psychiatric patients. Health care providers and policy makers should optimize treatment outcomes by addressing family functioning in adolescents with emotional problems.

Keywords Family functioning · Adolescents · Quality of life · Emotional problems

Introduction

Psychopathology in children and adolescents tends to persist well into young adulthood [1–4], and clinical interventions often do not completely reduce psychiatric symptoms [5, 6]. That points to the importance of addressing quality of life (QoL) as an outcome in clinical practice and research. Identification of referred patients with a high risk of poor improvement of QoL, and knowledge of factors that promote improvement, would be highly valuable to clinicians. This study addressed these issues in adolescents referred for psychiatric services.

Studies on adolescents who were referred to psychiatric services examining QoL as an outcome are still limited. A recent review [7] identified 41 studies, all published after the year 2000. However, the evidence base is skewed because a majority of 32 studies investigated QoL in neurodevelopmental disorders like Attention Deficit Hyperactivity

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Disorder (ADHD) and autism spectrum disorders. Studies on diagnostic groups such as depressive disorder, anxiety disorder, schizophrenia, and eating disorders were largely lacking. Nonetheless, this review and other studies [7–10] concluded that self-reported global QoL is significantly reduced in children and adolescents with different psychiatric disorders compared to typical/healthy controls across QoL dimensions.

Whereas there is evidence that psychopathology is negatively associated with QoL in studies of adolescents referred for psychiatric disorders, there are indications that "psychopathology" and "QoL" are related but not identical concepts and may vary independently. QoL has been shown to improve even without psychiatric symptom reduction. For example, 11% of 7–19-year-old patients improved their QoL measured by the Pediatric Quality of Life Inventory™ (PedsQL™) [11] following standard services, while the level of psychopathology remained high [12]. Further, approximately 12% of 8–13-year-old children with mental health problems in the general population reported high QoL as measured by KIDSCREEN [13, 14]. Therefore, it is important to identify *other factors* beyond psychopathology that may influence QoL among referred adolescents.

Lower QoL, as measured for example with the Inventory of Life Quality in children and adolescents (ILC) [15], the World Health Organization Quality of Life Instrument [16], the PedsQL™, and the Child Health and Illness Profile CHIP-Child Edition [17], has been associated with being female [18–20], older age [18, 20–25], and lower socio-economic status (SES) [21]. A range of psychological factors have also been found to be related to QoL in children and adolescents with psychiatric disorders. We chose to examine *self-esteem* and *family functioning* in the present study. Problematic *family functioning*, as measured by the "Familienboegen" [26], was associated with low well-being related to parents in children and adolescents referred to outpatient psychiatry [27]. Adolescents with ADHD and coexisting emotional and conduct problems reported significantly lower QoL and *family functioning*, as measured by the McMaster Family Assessment Device (FAD) [28], than adolescents without such coexisting problems [29]. Poor child QoL (PedsQL™) reported by child, parent and clinician was also associated with low *child self-esteem*, as measured by the Global Worth Scale of the Self Perception Profile for Children or Adolescents (SPPA) [30] and poor *family functioning* (FAD [28]) among other factors [31]. In a study of the general population of adolescents with parents with mental health problems, good QoL (KIDSCREEN [14]) was associated with the adolescents' *family climate* ("Familienskala") [32] [33]. The *self-esteem domains* (SPPA [30]) of social acceptance and physical appearance added substantially to the explained variance in QoL among adolescents living in Residential Youth Care institutions over and beyond their levels of psychopathology [34]. In this study QoL was measured by the KINDL [35]. Because QoL has been more strongly associated with internalizing than externalizing pathology [13, 27], we focused in the present study on adolescents' self-report of emotional problems, specifically anxiety and depression. In summary, results from these *cross-sectional* studies of referred adolescents supported our hypothesis that *age*, *gender, SES*, *family functioning,* and *self-esteem* are associated with QoL over and above psychopathology.

There is a lack of research identifying predictors of change in QoL over time in longitudinal studies of adolescents referred with psychiatric problems [7]. We have been able to identify only two such studies. A study among 11–17 years old adolescents from the general population [36] showed that among other factors *adolescent mental health problems*, as well as *parental mental health problems,* were negatively, and *family climate* ("Familienskala") [32]) was positively associated with initial QoL (KIDSCREEN [14].) Further, *increases in mental health problems* were negatively and *increases in self-efficacy* were positively associated with QoL change over a 2-year period. A recent study among the general population [37] showed that *family functioning* (FAD [28]) as perceived by adolescents significantly mediated the longitudinal association between psychopathology and QoL (ILC [38]).

In the selection of measures for the present study, we had to compromise between measures that could be compared with previous studies (as reviewed above) and instruments available from the epidemiological CAP survey providing the data (see below). Thus, we used the ILC [38] for measuring QoL and the FAD [28] for measuring family functioning. Finally, because parent report of QoL does not correspond well with child self-report of QoL [39, 40] we decided to use only adolescents self-report for the assessment of QoL, which is considered as the prime authentic [40] report of QoL. In contrast, for the assessment of family functioning both parent and child perspectives are important to get a full picture of the family [41].

Aims of the study

The aim of this study was to investigate, in adolescents referred for psychiatric services, the associations of initial self-esteem and family functioning with level and change of quality of life (QoL) over a 3-year period, over and above the effect their emotional problems may have on their QoL.

Methods

Ethics

Written informed consent was obtained from adolescents and parents prior to enrollment. Study approval was given by

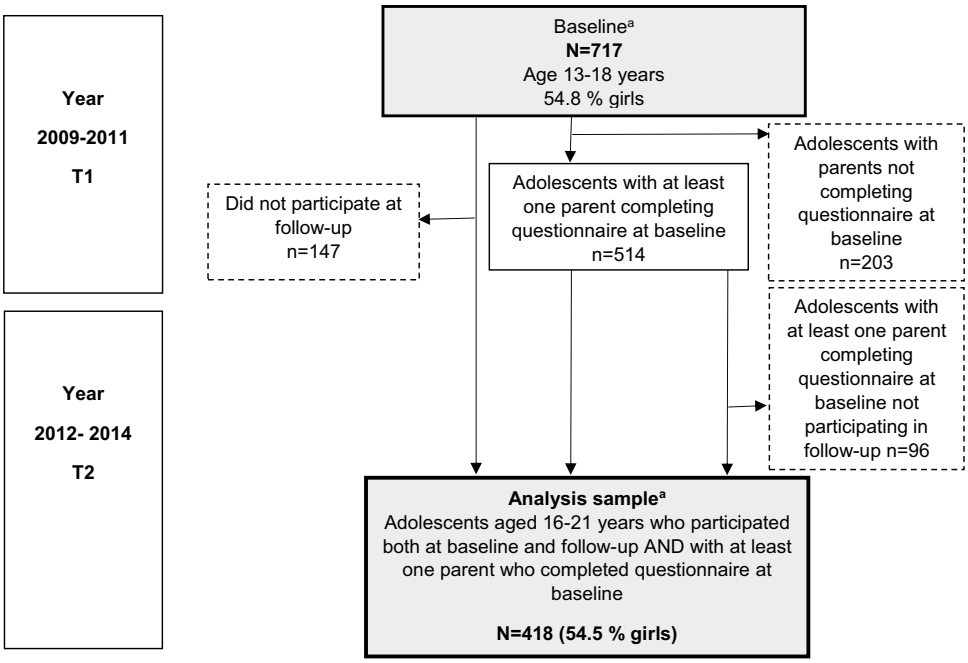

Fig. 1 Flow-chart. [a]Baseline and analysis samples were addressed in attrition analysis, see "Results" section

the Regional Committees for Medical and Health Research Ethics (reference numbers CAP survey T1: 4.2008.1393, T2: 2011/1435/REK Midt; present study: 2016/544/REK Midt), and by the Norwegian Social Science Data Services (reference number CAP survey: 19976).

Population, sample and participants

The Health Survey in the Department of Child and Adolescent Psychiatry (CAP), St. Olav's University Hospital, Norway, aimed to assess a defined psychiatric clinical population at two time points: baseline (T1) during the period 2009–2011 and the 3-year follow-up (T2) during the period 2012–2014. Inclusion criteria were: adolescents aged 13–18 years, who had at least one personal attendance at the clinic over a 2-year period. The catchment area for the Department of CAP was a county in central Norway with 303,664 inhabitants, which includes urban and rural areas.

In the baseline study period (February 15, 2009 through February 15, 2011), 2032 adolescent patients (13–18 years of age) had at least one attendance at the CAP clinic. Of these, 289 were excluded based on major difficulties in answering the questionnaire due to their psychiatric state, cognitive function, visual impairments or insufficient language skills. Emergency patients were invited to take part once they entered a stable phase. Also, 95 were lost in the registration process (i.e., missing). Hence, 1648 (81.1%) were invited to participate, of which 717 (43.5%) completed the CAP survey at T1. At T2 (2012–2014), participants were aged 16–21 years of age. All participants who consented for the baseline period and to further inquiry were invited to participate for the follow-up assessment at T2. In all, 570 participants (83% of 685 eligible) completed the follow-up questionnaire.

For adolescents who participated *both* at baseline and follow-up, 418 parent questionnaires were available at baseline (T1), including parent-reported family functioning and SES (see flow-chart Fig. 1). These 418 adolescents constituted the analysis sample. Table 1 provides an overview of main diagnostic categories according to ICD-10 based on routine clinical assessment.

Assessment procedures

At T1, newly referred patients and patients already enrolled at the CAP clinic received oral and written invitations at their first attendance in the study period. Parental consent was obtained for participants under 16 years of age while participants aged 16 years or older gave written informed consent to participate. Parents were invited to provide supplementary information and, if so, they also gave written informed consent to participate. The participating adolescents responded to an electronic questionnaire via a password protected website at the clinic, without the presence of their parents. If needed, a project coordinator helped. The parents completed either an electronic or paper questionnaire. In addition, data were collected from clinical charts. At T2, written informed consent was obtained from adolescents who were all 16 years or older. Parents had also to give their written informed consent before completing the parent questionnaire. Follow-up data were collected by an electronic questionnaire from the enrolled adolescents and their parents.

Table 1 Descriptive information of the analysis sample at baseline ($N=418$)

	n	%	M (SD/range)
Girls			
Year of birth	228	54.5	1994.39 (1990–1997)
Socio-economic status (SES)[a]			
< 200,000 NOK	18	4.3	
200,000–349,000 NOK[b]	64	15.3	
350,000–549,000 NOK	100	23.9	
550,000–749,000 NOK	117	28.0	
750,000–999,000 NOK	78	18.7	
1 million or more NOK	39	9.3	
Information missing	2	0.5	
Time between first contact with CAP and baseline assessment			1.40 years (1.73)
Group of ICD-10 clinical diagnosis[c]			
F10–F19 Mental and behavioral disorders due to drugs	5[e]	1.2	
F20–F29 Schizophrenia and related disorders			
F30–F39 Affective disorders	42	10.0	
F40–F48 Anxiety disorders	75	17.9	
F50–F59 Behavioral syndromes ass. with physiol. disturb[cd]	20	4.8	
F80–F89 Developmental disorders	25	6.0	
F90–F98 Behavioral and emotional disorders in childhood	174	41.6	
Medical observation, suspected disorder or no diagnosis	70	16.7	
Information missing	7	1.7	
Total	418		

[a]Family income

[b]Norwegian Crowns

[c]Only primary diagnosis of the International Statistical Classification of Diseases and Related Health Problems

[d]Behavioral syndromes associated with physiological disturbances and physical factors

[e]Both F10–F19 and F20–F29

Measures

Emotional problems were measured using the Symptom Check List-5 (SCL-5), which consists of five items from the 25-item version [42] addressing for example "Felt down and sad". Whereas the SCL-5 has very high correlations ($r=.92$) with the SCL-25 and a satisfactory reliability [43], a distinction between anxiety and depressive problems is not possible from this reduced item set [44]. Responses are provided on a five-point scale, which are summed across items for a range of 5–25. A high score indicates more emotional problems.

Self-esteem was measured with a four-item version of the Rosenberg Self-Esteem Scale [45] addressing for example "I have a positive attitude towards myself". Scores calculated from this version correlate highly with those from the full scale ($r=.95$), which has demonstrated construct validity as a measure of self-esteem in a large body of literature. Items are rated on a four-point scale and summed for a total score, ranging 4–16, with a high score indicating high self-esteem.

Family functioning was measured with the General Functioning Scale (GFS) [46] of the (FAD) [28] administered separately to the adolescent and a parent. The 12-item scale measures family functioning reflecting six different areas, including problem solving, communication, roles, affective responsiveness, affective involvement, and behavioral control. Each item is rated on a four-point scale, and scores are summed, ranging 12–48, with higher scores indicating poorer family functioning. The reliability of the GFS is high, with alpha = .92 [28]. The construct validity of the GFS has been supported by findings from the Ontario Child Health study, a large epidemiological study of all children from 4 to 16 years [47] and a Norwegian study [37]. Because previous research on QoL in children and adolescents from both clinical and general populations, as described in the Introduction [29, 31, 37], has used the FAD, results can be compared.

Sociodemographic information about age, gender, and total household income as a measure of SES was collected from the parents.

Time of contact with CAP before baseline assessment was calculated as the difference between date of first contact with the clinician at CAP and date of baseline assessment for each

participant. Because this varied among participants, time of contact was adjusted for in the analysis.

QoL was measured using the ILC [15, 38] administered to the adolescent. This 7-item self-report questionnaire includes one item for global evaluation of QoL and six items that address the adolescent's physical and mental health, perception of activities when alone, perceived relationships with friends and family, and functioning in school. Each item is rated on a five-point Likert scale. In the present study, only six items were used to calculate a total QoL score, excluding the domain "family" due to overlap with the GFS. Item ratings are summed, ranging 0–24, with higher scores reflecting higher QoL. Reliability testing of the Norwegian version indicated good internal consistency (alpha = .80–.81 and 2-week test–retest reliability ICC = .86). The construct validity of the ILC is satisfactory [38]. Because previous research on QoL in children and adolescents from both clinical and general populations, as described in the Introduction [20, 22, 23, 37], has used the ILC, results can be compared.

Statistical methods

We used a modified growth-model approach with two time points [48]. In this "growth model" the *Intercept* refers to initial QoL at T1, and the *Slope* refers to change in QoL over the follow-up period (between T1 and T2). To avoid confusion for readers with the standard understanding of a growth model, which is estimating the trajectories of the development of the variable of interest over time (and the intercept, which is usually set at the starting point T1), we explain our approach in more detail. In a standard growth model one needs at least three time points to have enough degrees of freedom to estimate the trajectory as a latent variable. In a modified growth model with two time points [48], the trajectory from T1 to T2 is not estimated but simply calculated as the difference between T1 and T2. The values in QoL for both time points for each person are transformed into $QoL_{T1,}$ which is referred to as the intercept at T1, and "QoL_{T2}–QoL_{T1}," which is referred to as the slope in the growth-model language. To make analysis work with two time points, the residuals of the two QoL measurements need to be fixed to zero so that the intercept is identical to QoL_{T1} and the slope is identical to the difference between QoL at T1 and T2.[1]

[1] We used Mplus 8 for our analysis with the following syntax:
Model:
intercept slope | QOL_{T1} QOL_{T2}; !Comment: This line defines a growth model with two time points, centered on T1
QOL_{T1} QOL_{T2}*=0;* !Comment: This lines fixes the residuals of the two measurements of QOL to 0
intercept slope ON emotional_problems self_esteem family_functioning_child family_functioning_parents ses time age gender;
!Comment: This line regresses intercept (= QOL_{T1}) and the slope (= difference between QOL_{T2} and QOL_{T1}) on the predictors and the variables we wanted to adjust the effects for.

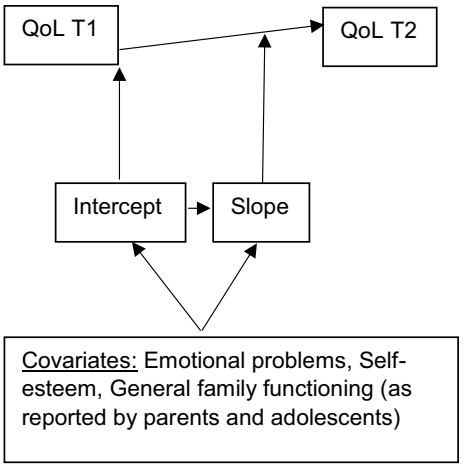

Fig. 2 Covariates of Quality of life changes in present analysis. The model was adjusted for age, gender, socio-economic status (SES), and time of contact with Child and Adolescent Psychiatry before baseline assessment (T1). QoL T1 = initial Quality of life at baseline; QoL T2 = Quality of life after 3 years

Initial QoL (intercept) and change of QoL over the follow-up period (slope) were then regressed on the predictors in the model, all of which were assessed at baseline and included the covariates as shown in Fig. 2. The analysis was adjusted for age, gender, SES, and time of contact with CAP before baseline assessment (T1). Two-sided p-values < .05 were considered statistically significant. Correlations were calculated as appropriate for the variables involved, using Pearson for two continuous and biserial for one binary and one continuous variable. Statistical analyses were conducted using SPSS Statistics (v22; IBM SPSS, Armonk, NY) and Mplus (v8 Muthén & Muthén, Los Angeles, CA 1998/2017).

Missing data caused by attrition

To investigate the representativeness of the study population, anonymous information about the total clinical population was collected from annual reports from St. Olav's University Hospital, during the period 2009–2011. Exclusion criteria were similar for the study and the reference population. All adolescents in the study period (n = 2032) minus those excluded (n = 289) were defined as the reference population (n = 1743). We compared the *main reason for referral, age,* and *gender* between participants (n = 717) and non-participants (n = 1026) of the reference population. We also conducted an attrition analysis to validate the representativeness of the present analysis sample (n = 418). The expectation maximization (EM) method was used to substitute missing values, thus providing a complete dataset of n = 418 for the analysis.

Table 2 Estimated correlations among study variables for referred adolescents ($N = 418$) at baseline and follow-up

	Initial QoL level	Change in QoL	Age	Sex	Time	SES	Self-esteem	FAD (self)	FAD (par)	SCL 5
Initial QoL level	–									
Change in QoL	**−.47*****	–								
Age	**.23*****	**−.16****	–							
Sex	**.33*****	−.04	**.21*****	–						
Time	**.17****	**−.10**^{a}	−.10	**.19*****	–					
SES	.07	−.06	.07	.02	−.01	–				
Self-esteem	**.71*****	**−.28*****	**.21*****	**.46*****	**.16****	.03	–			
FAD (self)	**−.48*****	**.13****	**−.13****	**−.16*****	−.05	.01	−.49***	–		
FAD (parent)	−.07	**−.12**^{a}	**−.11**^{a}	.01	.01	−.02	−.07	**.27*****	–	
SCL 5	**−.68*****	**.26*****	**−.31*****	**−.45*****	**−.15*****	−.04	**−.67*****	**.35*****	.05	–

Sex (0 = female; 1 = male); Initial Quality of Life (QoL) level at baseline = Intercept; Change in QoL = Slope; FAD (self) = adolescent report of general family functioning; FAD (parent) = parent report of general family functioning (a high value on the FAD indicated low family functioning). Time = time between first contact with Child and Adolescent Psychiatry and baseline assessment

Bold = significant $^{***}p < 0.001$; $^{**}p < 0.01$; $^{a}p = 0.05$

Results

Attrition and representativeness of the sample

The main reason for referral did not differ between participants and non-participants. The mean age of participants and non-participants was similar [15.7 (SD = 1.65) vs. 15.4 (SD = 2.00)] as well as the gender distribution (females $n = 393$, 55% vs. $n = 509$, 50%).

We compared adolescents included in the analysis sample (i.e., $n = 418$ who participated both at baseline and follow-up and who had parents providing information on questionnaires), with those ($n = 299$) who either did not participate at follow-up or had parents who did not provide information at baseline (see Fig. 1). The latter group was significantly ($p = 0.038$; $t(715) = -2.08$) older (birth year 1994.11) compared to the group of adolescents included in the present study (birth year 1994.39) by about 2 months. The proportions of females were almost equal (55.2% vs. 54.5%). We found no significant differences regarding Emotional problems ($p = 0.181$; $t(715) = 1.34$) and QoL ($p = 0.090$; $t(715) = -1.699$) at baseline between the two groups.

The frequency of missing item values in the dataset of $n = 418$ was 0.0–0.2% for the SCL5, 0.5–0.7% for Self-esteem, 2.2–4.5% for the FAD self-report, 1.4–3.1% for the FAD parent report, 2.2–3.3% for the ILC at T1 and 1.2–2.6% for the ILC at T2. Further, the variable "Time of contact with CAP before baseline assessment" had 6.2% missing values and SES 0.5%.

Gender

The baseline sample included 393 (54.8%) and the analysis sample 228 (54.5%) females.

Quality of life

There was no significant difference between participants' mean QoL at T1 ($M = 15.3$; SD = 4.5) and T2 ($M = 15.5$; SD = 4.6); $t(417) = -0.988$; $p = 0.324$. Table 2 shows the estimated correlations of variables used in the study. Most correlations were small ($r < .30$) to medium ($r = .30$–$.49$). Only three correlations were high ($r = .67$–$.71$), those among initial QoL, Self-esteem, and Emotional Problems.

Emotional problems

As shown in Table 3, a higher level of emotional problems at baseline (T1) was significantly ($p < 0.001$) associated with lower initial QoL at T1, but not with change of QoL over the follow-up period.

Self-esteem

A lower self-esteem at baseline (T1) was significantly ($p < 0.001$) associated with lower initial QoL at T1, but not with change of QoL over the follow-up period (see Table 3).

Family functioning

Adolescent-reported lower family functioning at baseline (T1) was significantly ($p < 0.001$) associated with lower initial QoL at T1, but not with change of QoL over the follow-up period (see Table 3). Parent-reported lower family functioning at baseline (T1) was not associated with initial QoL at T1. However, lower parent-reported family functioning was significantly ($p = 0.001$) associated with a decrease in QoL over the follow-up period (see Table 3).

Table 3 Emotional problems, self-esteem and family functioning as covariates for initial QoL values (at baseline) and change in QoL over the follow-up period for referred adolescents ($N=418$)

	Initial QoL			Change in QoL		
	Estimate	Stand. β	Two-sided *p*-value	Estimate	Stand. β	Two-sided *p*-value
Emotional problems (SCL-5)	**−0.382**	**−0.373**	**0.000**	−0.033	−0.099	0.110
Self-esteem (Rosenberg)	**0.571**	**0.388**	**0.000**	−0.007	−0.014	0.841
Family functioning FAD (adolescent report)	**−0.114**	**−0.169**	**0.000**	−0.017	−0.075	0.174
Family functioning FAD (parent report)	0.021	0.025	0.448	**−0.038**	**−0.138**	**0.001**
Adjusted for:						
SES	0.153	0.045	0.158	−0.025	−0.023	0.613
Time in CAP before T1	**0.159**	**0.062**	**0.047**	−0.049	−0.059	0.196
Age	0.073	0.029	0.367	**−0.098**	**−0.118**	**0.011**
Sex	−0.603	−0.068	0.055	**0.363**	**0.125**	**0.011**

Dependent variable—quality of life (high value is indicating high QoL); figures in bold—statistic significant $p<0.05$ or $p<0.001$, see two-sided *p*-values for exact value

SCL-5 Symptom Checklist 5, *FAD* general functioning scale of the McMaster family assessment device. High value on the FAD = more problems in the family = low family functioning, *SES* Socio-economic status, *CAP* Child and Adolescent Psychiatry

Adjustment for SES, time, age, and gender

SES was not significantly associated with QoL. Being older was significantly ($p<0.05$) associated with decreasing QoL and being a male was significantly ($p<0.05$) associated with increasing QoL over the follow-up period. A longer time period of contact with CAP before baseline assessment was associated with a higher level of initial QoL at T1, but not with change of QoL over the follow-up period (see Table 3).

Discussion

In the present study more emotional problems, higher self-esteem, and lower family functioning as reported by adolescents at baseline were associated with lower initial level of QoL. However, none of these factors was associated with significant *changes* in QoL over the subsequent 3 years. Rather, only poorer family functioning as reported by parents at baseline was significantly associated with change in QoL, namely a decrease over the 3-year period.

Consistent with prior research [7], it is not surprising that a higher level of emotional problems at baseline was associated with lower initial QoL. Although there have been few longitudinal studies assessing QoL change in adolescent psychiatric patients during and following treatment [49–51], they all have reported an increase in QoL over time. In these studies, a single specific structured therapeutic intervention was evaluated. In our study we evaluated "standard psychiatric service" comprising many intervention approaches administered by a variety of clinicians. QoL for all patients *on a group level* did not change. Thus, it seems likely that patients showing increasing QoL balanced patients who showed decreasing QoL over the 3 years period. Further, initial emotional problems were not associated with change in QoL over the follow-up period. It seems likely that "standard psychiatric service" had reduced the influence of patients' initial emotional problems on QoL because emotional problems were not linked to QoL changes over 3 years. It was important to include this variable in our model thereby "adjusting for emotional problems," because we wanted to examine the role of self-esteem and family functioning in any changes in QoL, which could be targets for interventions to increase QoL beyond improvements in emotional problems. One of the previous treatment studies [51] used the KINDL to measure QoL and not the ILC, as we did in the current study. Thus, comparison between this and our study is somewhat difficult due to the use of different measures. However, these two measures correlated highly ($r=.69$) with each other [52], and therefore, a comparison might be possible.

Previous studies [53, 54] showed that self-esteem and psychopathology, including for example emotional problems, are interrelated. A higher self-esteem at baseline in our study was associated with lower initial QoL, but not with change of QoL over the follow-up period.

A higher family functioning was significantly associated with higher QoL 3 years later. However, surprisingly, QoL change was only predicted by the *parent* report of family functioning. This finding may have two implications. First, as we previously have shown in the general population [37], the family remains an important social domain for adolescents when they are developing mental health problems. The present results confirm this conclusion also for this

clinical population. It is an advantage for comparison that we used the same instruments to assess family functioning and QoL in both studies. The family remains important for adolescents, possibly even more so when they experience emotional problems. Therefore, family functioning must be an important consideration when attempting to reduce emotional problems in youth in psychiatric services and improve the quality of their life experience [37]. Psychopathology including emotional problems may be both a cause and a consequence of family difficulties [55]. Clinicians should address the whole family, when treating adolescents with emotional problems.

Second, it is important who provides information about family functioning in adolescent psychiatry. Our results suggest that parents have important information about their families that may play a role in influencing QoL development in adolescent psychiatric patients. And this may differ to some extent from the adolescents' perspective. In the present study, the correlation between parent and adolescent family functioning report was low ($r = .27$), supporting such an interpretation. Thus, when adolescents are referred to psychiatric services, the clinician should be aware of this information in his or her assessment and solicit input from parents. An adolescent in distress may understandably see his or her family in negative terms presently, but this does not necessarily predict his or her future well-being. It might be that parents focus on other aspects of family functioning than their adolescents do that have more to do with adolescents' well-being over the longer run. This differentiation should be explored in future research.

Strengths and limitations

Strength of this study is the longitudinal investigation of factors associated with adolescent QoL outcome over time above and beyond emotional problems in a large clinical psychiatric population, which extends previous knowledge. The results have potential implications for clinical practice.

One important limitation is the correlational design, which prohibits causal interpretations. Family functioning influences child/adolescent psychopathology and vice versa [56, 57]. However, family functioning may also play a significant role in the association between psychopathology and QoL [37]. Therefore, we did not address cause and effect, but investigated *associations* among initial emotional problems, self-esteem, family functioning and the *associations* of these factors with level and change of QoL.

Another limitation is the response rate at baseline of 43.5% ($n = 717$) and a further reduction of the sample for the present study to $n = 418$ due to loss at follow-up and lack of parent information at baseline. Although attrition analyses demonstrated representativeness of the analysis sample on important variables, attrition limits the generalizability of the findings. Although family functioning was assessed based on both adolescent and parent report, the other variables were based on adolescent self-report, possibly enhancing observed relationships due to shared method variance. Norway has by current standards a highly homogenous population, which may further limit generalizability to more diverse societies.

Conclusion

In the present study parent-reported family functioning predicted QoL changes over 3-year in adolescent psychiatric patients. Thus, parents have important information about their families that may play a role in QoL development in adolescent psychiatric patients. Family functioning must be an essential consideration when attempting to reduce emotional problems in adolescents in psychiatric services and improve the quality of their life experience.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest. The first author receives royalties from Publisher Hogrefe/Psykologiförlag Stockholm for authorship of the "Norwegian Manual—ILC QoL measure, 2012″ which was used in this study.

Informed consent All adolescents and parents who participated gave their written informed consent. This study was approved by the Regional Committee for Medical Research Ethics in Central Norway. The procedures in this study were in accordance with the 1964 Helsinki declaration and its later amendments.

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